LIST OF CURRENT CLAIMS

Claim 1 (Currently Amended). A clamping apparatus, wherein

a central pillar is projected from a reference member so as to be inserted into a hole opened in a movable member,

the central pillar is provided with an inclined outer surface that tapers toward a leading end of the central pillar,

an annular intermediate member defining a circumference in which at least a part of the circumference is allowed to deform in both an expanding direction and a contracting direction is arranged at the outside of the inclined outer surface, the intermediate member is provided with a straight outer surface allowed to fit to an inner peripheral surface of the hole and with an inclined inner surface facing the inclined outer surface,

a pull member is axially movably inserted into the central pillar, and the pull member is connected to the intermediate member substantially at all times in a manner to prevent relative axial movement between the pull member and the intermediate member,

a lock arrangement and a release arrangement are provided in the reference member, the lock arrangement moves the intermediate member via the pull member toward a base end for locking and the release arrangement moves the intermediate member via the pull member toward the leading end for releasing,

a fluid flow hole is opened in the straight outer surface of the intermediate member, and when the intermediate member moves for locking and the straight outer surface comes into close contact with the inner peripheral surface of the hole, the fluid flow hole is closed by the inner peripheral surface of the hole.

Claim 2 (Withdrawn). A clamping apparatus, wherein

a central pillar (12) is projected from a reference member (2) so as to be inserted into a hole (5) opened in a movable member (3),

the central pillar (12) is provided with an inclined outer surface (13) that gets closer to the axis toward a leading end of the projection direction,

a plurality of pressing members (43) that are radially movable are arranged at the outside of the inclined outer surface (13), and the pressing member (43) is provided with a straight outer surface (16) allowed to fit to an inner peripheral surface of the hole (5) and with an inclined inner surface (17) facing the inclined outer surface (13),

a pull member (21) is inserted into the central pillar (12) axially movably, and the pull member (21) is connected to the pressing members (43),

a lock means and a release means are provided in the reference member (2), the lock means moves the pressing members (43) via the pull member (21) toward a base end for locking, and the release means moves the pressing members (43) via the pull member (21) toward the leading end for releasing,

a fluid flow hole (38) is opened in the straight outer surface (16) of the pressing member (43), and when the pressing member (43) moves for locking and the straight outer surface (16) comes into close contact with the inner peripheral surface of the hole (5), the fluid flow hole (38) is closed by the inner peripheral surface of the hole (5).

Claim 3 (Withdrawn). A clamping apparatus, wherein

a central pillar (12) is projected from a reference member (2) so as to be inserted into a hole (5) opened in a movable member (3),

an inner sleeve (61) which is radially expandable and contractible is supported on the central pillar (12) movably along the axis of the central pillar (12), and a tapered outer surface (13) is formed on an outer peripheral surface of the inner sleeve (61),

an outer sleeve (71) which is radially expandable and contractible is arranged at the outside of the inner sleeve (61), a tapered inner surface (17) allowed to make a tapering engagement with the tapered outer surface (13) is formed on an inner peripheral surface of the outer sleeve (71), a straight surface (16) allowed to fit to an

inner peripheral surface of the hole (5) is formed on an outer peripheral surface of the outer sleeve (71),

an advancing means (25) which presses the inner sleeve (61) in such a direction as to tighten the tapering engagement is provided,

a fluid flow hole (38) is opened in the straight outer surface (16), and when the straight outer surface (16) comes into close contact with the inner peripheral surface of the hole (5), the fluid flow hole (38) is closed by the inner peripheral surface of the hole (5).

Claim 4 (Withdrawn). A clamping apparatus, wherein

a central pillar (12) is projected from a reference member (2) so as to be inserted into a hole (5) opened in a movable member (3),

an intermediate member (15) which is radially expandable and contractible is supported on the central pillar (12) movably along the axis of the central pillar (12),

a tapered fitting surface (16) is formed on an outer peripheral surface of the intermediate member (15), a tapered inner surface (17) allowed to make a tapering engagement with the tapered fitting surface (16) is formed on the hole (5),

an advancing means (25) which presses the intermediate member (15) in such a direction as to tighten the tapering engagement is provided, and

a fluid flow hole (38) is opened in the tapered fitting surface (16), and when the tapered fitting surface (16) comes into close contact with the tapered inner surface (17), the fluid flow hole (38) is closed by the tapered inner surface (17).

Claim 5 (Withdrawn). A clamping apparatus, wherein

a central pillar (12) is projected from a reference member (2) so as to be inserted into a hole (5) opened in a movable member (3),

an intermediate member (15) which is radially expandable and contractible is supported on a support hole (92) of the movable member (3) movably along the axis of the support hole (92),

a tapered inner surface (17) constituting the hole (5) is formed on an inner peripheral surface of the intermediate member (15), and a tapered fitting surface (16) allowed to make a tapering engagement with the tapered inner surface (17) is formed on the central pillar (12),

an advancing means (25) which presses the intermediate member (15) in such a direction as to tighten the tapering engagement is provided, and

a fluid flow hole (38) is opened in the tapered fitting surface (16), and when the tapered fitting surface (16) comes into close contact with the tapered inner surface (17), the fluid flow hole (38) is closed by the tapered inner surface (17).

Claim 6 (Previously Presented). A clamping apparatus as set forth in claim 1, wherein

a plurality fluid flow holes is provided.

Claim 7 (Previously Presented). A clamping apparatus as set forth in claim 6, wherein

the plurality of fluid flow holes is provided circumferentially.

Claim 8 (Previously Presented). A clamping apparatus as set forth in claim 1, wherein

a housing provided in the reference member is provided with a fluid port for supplying pressurized fluid or discharging fluid,

a fluid passage is provided inside the housing and the fluid passage is connected to the fluid port,

the fluid passage is provided with a relay opening in the inclined outer surface of the central pillar, and

the fluid flow hole is provided so that a first end is opened in the straight outer surface and a second end is opened in the inclined inner surface respectively, and the second end faces the relay opening.

Claim 9 (Previously Presented). A clamping apparatus as set forth in claim 8, wherein

a plurality of fluid flow holes is provided circumferentially,

the fluid passage is communicatively connected to a groove formed along a circumferential direction in at least either the inclined outer surface of the central pillar or the inclined inner surface of the intermediate member, and

each second opening of the fluid flow holes on the inclined inner surface side faces the groove.

Claim 10 (Withdrawn). A clamping apparatus as set forth in claim 3, wherein

a housing (9) provided in the reference member (2) is provided with a fluid port (39) for supplying pressurized fluid or discharging fluid,

a fluid passage (40) is provided inside the housing (9), and the fluid passage (40) is connected to the fluid port (39),

the fluid passage (40) is provided with a relay opening (41) in an outer peripheral surface of the central pillar (12), and

the fluid flow hole (38) is provided so that one end is opened in the straight outer surface (16) and the other end is opened in the tapered inner surface (17) respectively, and the other end is connected to the relay opening (41) via a communication hole (79) formed in the inner sleeve (61) in a penetrating manner.

Claim 11 (Withdrawn). A clamping apparatus as set forth in claim 10, wherein

the fluid flow holes (38) are provided circumferentially in plurality,

the fluid passage (40) is communicatively connected to a groove formed in the circumferential direction in at least either the inclined outer surface (13) of the inner sleeve (61) or the inclined inner surface (17) of the outer sleeve (71), and

each of the openings of the fluid flow holes (38) on the inclined inner surface (17) side faces the groove.

Claim 12 (Withdrawn). A clamping apparatus as set forth in claim 4, wherein

a housing (9) provided in the reference member (2) is provided with a fluid port (39) for supplying pressurized fluid or discharging fluid,

a fluid passage (40) is provided inside the housing (9), and the fluid passage (40) is connected to the fluid port (39),

the fluid passage (40) is provided with a relay opening (41) in an outer peripheral surface of the central pillar (12),

the fluid flow hole (38) is provided so that one end is opened in the tapered fitting surface (16) and the other end is opened in an inner peripheral surface of the intermediate member (15) respectively, and the other end faces the relay opening (41).

Claim 13 (Withdrawn). A clamping apparatus as set forth in claim 12, wherein

the fluid flow holes (38) are provided circumferentially in plurality,

the fluid passage (40) is communicatively connected to a groove formed in the circumferential direction in at least either the inner peripheral surface of the intermediate member (15) or the outer peripheral surface of the central pillar (12), and

each of the openings of the fluid flow hole (38) on the inner peripheral surface side of the intermediate member (15) faces the groove.